

REMARKS

Claims 6-7, 10-11, 17-18, 23 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Boyden, et al (US2003/0112325, filed 12/13/2001) in view of Jeon (U.S. Patent No. 6,677,980) and Yoshimatsu (U.S. Patent No. 6,326,994).

Regarding claims 23 and 24, the Examiner has taken the position that Boyden teaches a method/device of video conferencing between first and second locations, the first location having a video camera (Fig. 1, 148) and a first image monitor (Fig. 1, 114) and the second conference location (not shown) having a second video conferee (similar to Fig. 1, 120), a second video camera (similar to 148) and a second image monitor (similar to 114) wherein the first video monitored displays an image of the second video conferee and the second video monitor displays an image of the first video conferee and, wherein the first and second video conferees face the first and second video cameras and first and second video monitors, respectively, the improvement comprising locating the first and second video cameras proximate the first and second image monitors, respectively, such that the first video camera and second video camera (Fig. 1, 148) are aimed at the first and second video conferees (citing paragraph 0023-0028, 0047, 0055-0056, Figs. 1 and 2).

The Examiner has candidly expressed that Boyden differs from cameras 23 and 24 in that the inventor does not teach calculating an angle theta between the optical axis of each of the video cameras and sight line established between the video conferees, the angle theta, defined by the equation $\theta = \tan^{-1}(H/D)$ where H = the camera height above the eye-to-eye sight line, D = the horizontal distance of each camera to its conferee and wherein theta is less than or equal to three degrees.

To allegedly teach what Boyden lacks, the Examiner turns to Jeon for its disclosure of a method and apparatus for correcting gaze of an image using a single camera which teaches calculating an angle theta between the optical axis of each of the video cameras and sight line established between the video conferees, the angle theta, defined by the equation $\theta = \tan^{-1}(H/D)$ where H is the camera height above the eye-to-eye sight line and D is the horizontal distance of each camera to its conferee (citing column 3, lines 6-21). According to the Examiner, Yoshimatsu, newly cited, teaches theta in the range of 0° to 3° inclusive specifically referencing column 6, lines 28-31 of this reference.

The Examiner has thus concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boyden to provide for the calculation of an angle theta between the optical axis of each of the video cameras

and sight line established between the video conferees, the angle theta, defined by the equation $\theta = \tan^{-1}(H/D)$ where H is the camera height above the eye-to-eye sightline and D is the horizontal distance of each camera to its conferee as this arrangement would facilitate the calculation of angle theta by means of the implementation of a "well known formula" in the art is shown by Jeon, thus facilitating the line of sight conferencing where theta is less than or equal to 3° as taught by newly cited Yoshimatsu to achieve the desired results for a given application.

In turning to claim 6-7 and 17-18, the Examiner notes that Boyden teaches video images of each of the first and second conferees as appearing upon the second and first video monitors at the second and first locations, respectively, that are approximately the size of the conferees citing paragraph 0025 and Fig. 1 of this reference, each of the first and second video cameras being characterized as having a length along their optical axes and lens diameters perpendicular thereto noting that these are implicit characteristics of camera arrangement.

Regarding claims 10-11, the Examiner further points to Boyden as teaching first and second video cameras that are adjustably positionable upon the first and second video monitors such that the first video camera is adjustably maintained within the emotionally neutral field of the image of the second conferee appearing upon the first video monitor and is further adjustable to maintain its optical axis aimed at the eyes of the first video conferee and the second video camera being adjustably maintained within the emotionally neutral field of the image of the first conferee appearing upon the second video monitor and is further adjustable to maintain its optical axis aimed at the eyes of the second video conferee citing paragraph 0028 and 0055-0056. The Examiner further notes that the video cameras are remotely adjustable at a distance from each camera location citing paragraph 0050.

The Examiner notes that Boyden does not show that conferees are located approximately 2-8 feet from each of the conferee's cameras. However, the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boyden's system to provide for this to suit particular situations in a video conference situation to meet user needs. No prior art was cited to support this conclusion.

Claims 8-9 and 19-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Boyden in view of Jeon as applied to claims 23 and 24 and further in view of Nixon et al. (U.S. Patent No. 6,806,847). Nixon was cited for disclosing a portable computer in a process control environment having a camera lens of a diameter in the range of $1/4''$ to $1/2''$ citing column 5, lines 13-17 of this reference. The Examiner has thus concluded that

it would have been obvious to one of ordinary skill in the art to modify Boyden's system to provide for first and second video cameras characterized as having a lens diameter no greater than approximately 0.47"/0.28" as this arrangement would facilitate providing required diameter lens to meet the application requirements as taught by Nixon.

The Examiner did not respond to arguments previously made by Applicant in light of the new grounds of rejection which the Examiner believed made applicant's arguments "moot."

As the Examiner is well aware, Boyden was previously cited against the claims of the present application. Boyden does not suggest creating an angle between the optical axis of each video camera and sight line established between the eyes of video conferences as recited in both independent claims 23 and 24. Boyden only suggests "an apparatus for receiving light for conversion to a video signal from a position proximate an eye-level of a person viewing a display." See the preamble to claim 13. The invention of Boyden is to employ a bendable coupling coupled to an image receiving device, the coupling having a stiffness selected to support its distal end at a plurality of positions. Again, the positioning of a suitable image pick up means is not of concern to Boyden as the applicant is completely silent on this salient feature. As long as Boyden's cameras are aimed at the first and second video conferences, Boyden's contribution to the art has been realized. In this regard, Boyden teaches away from the present invention in not recognizing the criticality of camera positioning with respect to the video conferences and their line of sight to the video monitors.

In an attempt to teach this deficiency, Jeon has been cited. However, the complexity of Jeon again more supports the patentability of the present application than renders it obvious. Specifically, the present application is able to provide enhanced video imaging by the judicious placement of first and second video cameras with respect to line of sight of the conferees. When the present application was originally filed, this critical feature was claimed in terms of camera placement at an emotionally neutral field of the image of each video conferee. In an attempt to quantify this characterization, the algorithm suitable for this purpose was specifically recited in claims 23 and 24. As such, in order to achieve the goals sought herein, one need only provide a camera at a suitable angle and in the proper position such that the angle between the optical axis of each of the video cameras and line of sight establish between the eyes of the video conferences is less than or equal to 3 degrees. Although Jeon may recognize the need to improve upon existing video conference techniques, Jeon's "solution" is exceedingly complex and teaches away from the elegantly simple solution provided by the present application. Jeon teaches the need to analyze an input image from a camera to determine a gaze

deviation value formed between the viewing direction toward the camera and the object viewing direction. This is done by analyzing an image captured by the camera and comparing it to a corresponding point coordinate of the input image as to a particular coordinate value of the corrected image whereupon a pixel value of the corrected image corresponding to the calculated coordinate is obtained using the input image from the camera. Obviously, sophisticated apparatus is required to make this calculation, none of which being required in a practice of the present invention which, as noted previously, would yield substantially equivalent results. Further, Jeon makes no mention of the presently claimed angle of ≤ 3 degrees. Only applicant has taught the criticality of this value.

Fundamentally, the Examiner's nonfinal official action differed from his previous official action in the citation of Yoshimatsu teaching, in column 6, lines 28-31 "theta...in the range of 0° to 3° inclusive." This characterization of Yoshimatsu is simply in error for the reasons expressed below.

Yoshimatsu deals with an environment completely unrelated to Boyden or Jeon or to the invention disclosed and claimed in the present application. Yoshimatsu teaches a method comprising "a first step of shifting a field of view of the first imaging means and a field of view of the second imaging means coarsely toward an object of imaging in a unified manner; a second step of shifting the field of view of the first imaging means so that the field of view of the first imaging means precisely track the object of imaging; and a third step of shifting the field of view of the second imaging means so that the field of view of the second imaging means follows the object of imaging tracked by the field of view of the first imaging means." Column 3, lines 3-12. Yoshimatsu deals with displaying 3-dimensional images of an object by acquiring images of the object from directions differing from one another as it relates to each of the right and left eyes of a person. Column 1, lines 18-27. There is, again, no relationship between this reference and the other art of record and the present application. In fact, it appears as if the Examiner merely sought out any reference that could be found which had recited a range of 0° to 3° for some purpose and plug the reference into the previously enunciated rejection in order to fill what was admittedly lacking. However, the 0° to 3° range as articulated in column 6 of Yoshimatsu does not relate to the parameters being measured and thus claimed in the present application. The cited language refers to Fig. 5 of the reference where D is the distance between both eyes of the viewer and L is the distance to a diffusion screen and the eyes of the viewer. As the Examiner is well aware, applicant's claimed relationship (claims 23 and 24) relates the camera height above the eye-to-eye

line of sight to the horizontal distance of each camera to its conferee. Again, the reference makes no such relationship.

As to claims 8-9 and 19-20, the Examiner, as noted above, cited Nixon in combination with Boyden and Jeon allegedly teaching one skilled in the art to choose a camera of the claimed invention.

The combination of Nixon with the remaining art represents a case of hindsight reconstruction of applicant's invention. Where Boyden deals with video conferencing, Nixon deals with "process control systems and, more particularly, to the use of a portable computer to provide enhanced support within a processed controlled environment." Column 1, lines 10-13. Such controlled functions include opening or closing valves and taking measurements of process parameters. Column 1, lines 24-26. The camera used by Nixon has nothing to do with the present environment and, as noted in column 5, cited by the Examiner, it is taught that "other video cameras can be used instead including, for example, video cameras that produce high or low definition, color or black and white (i.e., gray-scale) images." Column 5, lines 17-20. Again, combining such disclosure as it pertains to the use of a portable computer or PDA for enhanced support within a process control environment and combining that teaching with Boyden and Jeon would not have been done by one skilled in the art without the benefit of applicant's disclosure. This is particularly the case when it is realized that the camera size as defined in the rejected claims was chosen for the purpose of placement within an emotionally neutral field of an image while not being overly obtrusive, Nixon completely non-relevant reference.

It is applicant's unequivocal position that the art, when taken as a whole, does not anticipate nor render obvious applicant's invention. This position is well stated in the discussion which appears above. However, in addition, and as a cumulative reason for the patentability of the claims now before the Examiner, applicant provides a declaration of inventor Dr. Thomas Lewis evidencing the establishment of the invention of the subject matter claimed herein prior to the effective date of Boyden. As the Examiner is aware, Boyden was filed on December 13, 2001. Applicant filed the present application on March 6, 2002 but invented the claimed subject matter prior to the December 13, 2001 effective date of Boyden. In that applicant's declaration submitted under 37 C.F.R. 131 is self-explanatory in establishing reduction to practice prior to the effective date of the reference, it is respectfully asserted that Boyden should be removed as prior art herein.

For the reasons advanced above, it is respectfully asserted that the present application is in condition for allowance and such disposition is earnestly solicited.

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